



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,041	08/18/2003	Tien-yau Luh	08919-082001	3077

26161 7590 09/01/2005

FISH & RICHARDSON PC  
P.O. BOX 1022  
MINNEAPOLIS, MN 55440-1022

EXAMINER

GARRETT, DAWN L

ART UNIT PAPER NUMBER

1774

DATE MAILED: 09/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/643,041

Applicant(s)

LUH ET AL.

Examiner

Dawn Garrett

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 June 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 13-19 and 32-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 20-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Amendment*

1. This Office action is responsive to the amendment dated June 30, 2005. The species under consideration is formula (I) recited in claims 1 and 20 in which Ar is aryl, B is aryl, R<sub>1</sub> is aryl, and R<sub>2</sub> is hydrogen. Claims 1-39 are pending. Claims 13-19 and 32-39 are withdrawn as non-elected. Claim 20 has been amended. Claims 1-12 and 20-31 are under consideration at this time. [The examiner notes that claim 32, (although not presently under consideration because it is a withdrawn claim) is now indefinite due to the amendment of claim 20, which no longer has an alkyl group as a possibility for R<sub>1</sub>. Claim 32 recites R<sub>1</sub> as n-butyl.]
2. The amendment to the specification dated June 30, 2005 is acknowledged.
3. Claims 1-12 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al., J. Am. Chem. Soc., 122, p. 4992-4993. Lee et al. discloses compounds according to formula (3) (see col. 2, page 4993) in which X may be oxygen per the two furyl groups "A" in instant formula (I), Ar may be phenyl per the instant "Ar" group, phenyl groups are attached to the furyl groups per the instant "B" groups, R<sup>6</sup> may be hydrogen per the instant "R<sub>2</sub>" groups, and R<sup>1</sup> may be phenyl per the instant "R<sub>1</sub>" groups at the 3 position of the furyl ring (see col. 2, page 4993, formulas (3) and variable values in Tables 1-3 in col. 1 of page 4993). The inventive compounds described by Lee et al. are photoluminescent (see title and wavelength properties in Tables 1-3). Lee et al. fails to *exemplify* a compound according to formula (3) with all the substituents required by the species under consideration; however, Lee et al. clearly teaches for formula (3), R<sup>1</sup> may be phenyl, X may be oxygen, and R<sup>6</sup> may be hydrogen (see Tables 1-3). It would have

Art Unit: 1774

been obvious to one of ordinary skill in the art at the time of the invention to have made a luminescent compounds according to formula (3) wherein  $R^1$  is phenyl, X is oxygen, and  $R^6$  is hydrogen, because Lee et al. generally teaches all of these substituent groups for a formula (3) compound. One would expect a compound according to formula (3) wherein  $R^1$  is phenyl, X is oxygen, and  $R^6$  is hydrogen to be similarly luminescent to the exemplified compounds.

4. Claims 20-31 are again rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. (US 5,281,489) in view of Lee et al., J. Am. Chem. Soc., 122, p. 4992-4993. Mori et al. teaches electroluminescent devices comprising an anode, a luminescent layer, and a cathode (see abstract). The element may further comprise a hole inhibiting layer (also known as an electron transporting layer) comprising electron transporting materials (see col. 28, lines 63-66 and col. 29, lines 23-30). Mori et al. fails to teach the specific luminescent furyl-containing compound according to the elected species. Lee et al. discloses, in analogous art, compounds according to formula (3) (see col. 2, page 4993) in which X may be oxygen per the two furyl groups "A" in instant formula (I), Ar may be phenyl per the instant "Ar" group, phenyl groups are attached to the furyl groups per the instant "B" groups,  $R^6$  may be hydrogen per the instant " $R_2$ " groups, and  $R^1$  may be phenyl per the instant " $R_1$ " groups at the 3 position of the furyl ring (see col. 2, page 4993, formulas (3) and variable values in Tables 1-3 in col. 1 of page 4993). The inventive compounds described by Lee et al. are photoluminescent (see title and wavelength properties in Tables 1-3). Lee et al. fails to *exemplify* a compounds according to formula (3) with all the substituents required by the species under consideration; however, Lee et al. clearly teaches for formula (3),  $R^1$  may be phenyl, X may be oxygen, and  $R^6$  may be hydrogen (see Tables 1-3). It would have been obvious to one of ordinary skill in the art at the time of the invention to have

Art Unit: 1774

made a luminescent compounds according to formula (3) wherein  $R^1$  is phenyl, X is oxygen, and  $R^6$  is hydrogen, because Lee et al. generally teaches all of these substituent groups for a formula (3) compound. One would expect a compound according to formula (3) wherein  $R^1$  is phenyl, X is oxygen, and  $R^6$  is hydrogen to be similarly luminescent to the exemplified compounds. It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the luminescent compound according to formula (3) taught by Lee et al. in the luminescent layer of the luminescent device taught by Mori et al., because Mori et al. teaches luminescent agents are desired for the luminescent layer of the device.

### ***Response to Arguments***

5. Applicant's arguments filed May 12, 2005 have been fully considered but they are not persuasive.

Applicant argues Lee does not expressly show a compound according to the species under consideration and the reference discloses only 5 compounds of formula (3) (compounds 11a-11e). The examiner maintains the disclosure of Lee renders obvious a compound of the presently considered species, because Lee teaches all the required substituent groups for each of the variables of compound (3).  $R^1$  may be Ph, Ar may be phenyl and  $R^6$  may be H (see Table 1). A reference is not limited to working examples (see *In re Fracalossi*, 215 USPQ 569 (CCPA 1982)). Applicant's discussion of unexpected results is not considered persuasive to overcome the obviousness rejections of record. The examiner maintains the compound under consideration is clearly rendered obvious by the Lee formula 3.

***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is (571)272-1523. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached at (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1774

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Dawn Garrett  
Primary Examiner  
Art Unit 1774

D.G.  
August 29, 2005